

 <div style="display: inline-block; vertical-align: middle;"> <b>USDA</b>  <b>Forest Service</b> </div>		<b>REPORT OF INVESTIGATION</b> <i>(Reference FSH 5309.11)</i>		Case/File Number <b>08-05-8384201</b>																											
Controlling Office			Investigating Office																												
<b>R5 Investigations</b>			<b>R5 Investigations</b>																												
Case Type			Investigative Period																												
<b>Wildfire</b>			From: <b>July 30, 2008</b> To: <b>August 5, 2008</b>																												
Case Status			Report Type																												
<b>Closed, Referred to Claims /s/ Marion Matthews</b>			<b>Final /s/ [REDACTED]</b>																												
Case Name			Investigated By																												
<b>Rich Fire</b>			SA [REDACTED] SA [REDACTED] FPO [REDACTED]																												
<b><u>SYNOPSIS</u></b>																															
<p>On July 29, 2008 at approximately 3:15 pm a wildfire occurred adjacent to the Union Pacific railroad on National Forest System land. This origin is located on the Plumas National Forest, Mt. Hough District, in Plumas County, CA.</p> <p>The total size is approximately 6,586 acres and an approximate suppression cost of \$8,300,000 dollars as of August 6, 2008.</p>																															
Distribution <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Unit</u></th> <th style="text-align: left; border-bottom: 1px solid black;"><u>Copies</u></th> </tr> </thead> <tbody> <tr> <td>LE&amp;I, WO _____</td> <td>_____</td> </tr> <tr> <td>LE&amp;I, Region _____</td> <td>_____</td> </tr> <tr> <td>LE&amp;I, Region _____</td> <td>_____</td> </tr> <tr> <td>US Attorney _____</td> <td>_____</td> </tr> <tr> <td>Othe _____</td> <td>_____</td> </tr> <tr> <td>Othe _____</td> <td>_____</td> </tr> </tbody> </table>		<u>Unit</u>	<u>Copies</u>	LE&I, WO _____	_____	LE&I, Region _____	_____	LE&I, Region _____	_____	US Attorney _____	_____	Othe _____	_____	Othe _____	_____	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Prepared By: _____</td> <td style="width: 30%; text-align: center;">Signature</td> <td style="width: 30%; text-align: center;">8-06-2008</td> <td style="width: 10%; text-align: center;">Date</td> </tr> <tr> <td>Reviewed By: _____</td> <td style="text-align: center;">Signature</td> <td style="text-align: center;">Date</td> <td></td> </tr> <tr> <td>Approved By: /s/ [REDACTED] - Final</td> <td style="text-align: center;">Signature</td> <td style="text-align: center;">1-11-2010</td> <td style="text-align: center;">Date</td> </tr> </table>				Prepared By: _____	Signature	8-06-2008	Date	Reviewed By: _____	Signature	Date		Approved By: /s/ [REDACTED] - Final	Signature	1-11-2010	Date
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USDA  
Forest Service

## REPORT OF INVESTIGATION

(Reference FSH 5309.11)

Case/File Number

08-05-8384201

### Introduction

The first report of the Rich Fire was approximately 3:15 July 29, 2008, via cell phone, to the Plumas National Forest Dispatcher. This was from a family traveling westbound down Highway 70 from Quincy. The fire quickly spread up hill and jumped Highway 70 becoming a campaign fire.

That evening Special Agent [REDACTED] was notified to respond as the Lead Investigator and left Sonora that night arriving on the fire scene the next morning, July 30, 2008.

Special Agent [REDACTED] was assigned to assist with the investigation and also arrived on July 30.

### Details of Investigation

#### **Initial Attack**

Forest Service fire Engine 25, responded from Gansner Bar fire station arriving at approximately 15:23. They were the first on scene. As they arrived one of the crewmen, in the back seat, snapped a photo of the fire with his cell phone, through the windshield of the fire truck.

They observed the main fire to be above the tracks and approximately 5 acres in size. The fire was moving upslope as well as diagonally across the slope to the north as it moved with the wind. The south flank and bottom of the fire had little or less intense fire activity.

They shortly noticed that the fire was jumping the highway to the north of them and began suppression action on these areas.

The suppression crews were no longer able to control the spots and were assigned to evacuate and protect structures, in the path of the fire, on Rush Creek road.

The responding Patrol/Fire Investigator, [REDACTED], was also diverted to evacuate homes in the path of the fire.

#### **Initial Investigation**

After the evacuations, [REDACTED] met with Law Enforcement Officer [REDACTED], at the Virgilia bridge. [REDACTED] had found Union Pacific Railroad welders, [REDACTED] and [REDACTED], and interviewed them. They stated they had been welding (exhibit 62) in the area approximately one hour prior to the fire being reported. [REDACTED] reviewed the report and asked [REDACTED] if he used the tent (exhibits 61,62) to shield the vegetation from sparks. [REDACTED] stated it would have taken too long to set up so they did not use it. They had very little time to do the project. (exhibits, 74, 77 [REDACTED] Interview and [REDACTED] Statement, respectively)

[REDACTED], [REDACTED] and [REDACTED], [REDACTED] talked over whether they could get to the origin safely and who would inspect the train at Portola. (An eastbound train had passed through the origin area just prior to the report of the fire and was stopped and waiting in Portola).

U.S. Forest Service Officer, [REDACTED] is a trained wildfire investigator and also specializes in railroad related incidents. [REDACTED] responded to Portola, CA to inspect the train that had passed by the origin just prior to the fire being reported. [REDACTED] inspected the components located in the exhaust. He also inspected the train brakes and journal bearings. He did not find anything abnormal.

The origin area was on a steep slope which was across the Feather River from Highway 70. Access to the area was via the railroad grade with entry points to the grade at Virgilia on the east and Richbar on the west.

██████████ and ██████████ protected the origin by guarding the access points at Virgilia and Richbar. They also stationed a guard on Highway 70 at mile marker 20.5 across from the origin, where they had a clear view of the origin area. Mile marker 20.5 has a large dirt turnout where ██████████ installed a large lighting system that illuminated the origin area for night observation. (exhibits 76, 77, ██████████ ██████████ Statements)

### Origin Examination

July 30, 2008

██████████ arrived in the area and met Officer ██████████ along side the Union Pacific Railroad tracks east of the Richbar crossing.

██████████ and ██████████ walked in approximately 1.5 miles to the south flank of the fire which was also the upwind side of the fire. At this point they noticed an area where the fire formed 3 separate "V" patterns on the cut bank. The welding project mentioned to ██████████ by the track crew, was also located here.

Before walking the upper portion of the perimeter, ██████████ and ██████████ checked the bottom of the perimeter (west flank) on the railroad grade. They observed the weld on the north end and a cut and splice on the south end. (two pieces of metal drilled and bolted over the joint between the two rails to join them together) There were also drill turnings lying in the ties at both ends of the work area. A 30 foot section of rail was lying to the west of the west rail with fresh, (unrusted) cut ends. The south end of this rail had a recent cut approximately 18 inches from the end. This cut was made with a cutting torch. ██████████ has experience using cutting torches, oxygen/acetylene and arc welding and recognized the cutting process when observed). The north end had two cross sectional pieces of rail lying next to it. One piece is approximately one half inch thick and the other a few thousandths of an inch thick. They also observed flakes of metal which may have dropped off of the train wheels or brakes.

██████████ and ██████████ continued by walking an uphill perimeter of the burn. Since the fire was several hundred acres at the time, they walked a large area on the hillside to read indicators and establish a general fire direction. (Exhibit 14).

██████████ and ██████████ walked up hill (east) on the south flank noting that the fire worked its way up the bank at a lower intensity and then became a well established run continuing up slope and also backing against the wind to the south. The backing indicators show less intense burning. Here the fire remained mostly on the ground and did not have the flame height or intensity to remove canopy as in the run area adjacent on the north. (exhibits 10,11,12,13) There was a transition area between the uphill run and the backing area to the south which was a slight ridge that ran east and west up the slope they were climbing. They traversed the slope to the north confirming that the fire continued to run up slope. (indicators were angle of chare and freezing). (exhibits 14,15,16) After traversing for several feet ██████████ could see indicators showing the fire was running with the wind at an angle up slope as well as across the slope, (to the north east). (exhibits 14,15,16). At this point they walked down hill watching indicators that confirmed the fire was still running in the same direction. Continuing down hill they worked into a very rocky area where the fuel continuity was broken. Here the fire could only move by spotting or trailing in fuel between the rocks. (exhibits 17). The spotting was consistent with the wind direction, which was still at an angle across slope from the south. ██████████ and ██████████ continued down slope back to the railroad bed approximately 70 feet north of their starting point

██████████ and ██████████ began the examination of a burn area below the railroad grade. They dropped down the steep bank arriving at the top of this burn which was approximately one quarter acre in size.

Due to the extreme slope, they began the perimeter search at the top and worked around the south flank. Since the bottom third of the burn was very steep, ██████████ walked a transect through the middle of the fire checking

indicators. He reached a rock outcropping on the north flank and worked his way up slope, east to the top of the burn.

This perimeter search showed that the fire was moving up hill with a few runs that swept up through the taller oak and cedar trees. There was an area at the upper third of the south flank that showed less intense burning and backing. [REDACTED] observed that there were power lines passing over the lower end of the burn. During inspection of the conductors [REDACTED] observed an anomaly on the center conductor. (exhibit #50). He looked closer with binoculars and discovered that three strands of the conductor were severed and bent back approximately 3 to 5 inches. The tips of these strands are dark and the strands, uncovered by the removed strands, are shinier than the surface strands. [REDACTED] could not locate damage on the adjacent conductors or on any other spans of the lines. He inspected the insulators on the poles at each end of this span and was unable to see any damage or anomalies. (This anomaly will be further evaluated).

[REDACTED] and [REDACTED] observed they would need ropes to safely access the lower portion of the burn, meanwhile they continued with the evaluation of the specific origin on the upper fire along the tracks.

[REDACTED] and [REDACTED] returned to the hillside, above the northern most "V" pattern. They worked their way across the slope to the south, looking at indicators, (staining on rocks and damage differential on vegetation), which showed that the fire moved up slope and across slope from the south to the north.

They followed the indicators to the south flank of the fire above the southern most "V" pattern, on the south end of the burn along the railroad tracks. On the south flank [REDACTED] zig-zagged down slope picking up more indicators showing the fire, which created the southern most "V" pattern, traveled up hill.

[REDACTED] examined this "V" pattern on the bank locating micro indicators, (staining on pebbles, damage differential on small organic material), which guided him to a "Specific Origin" approximately 2 feet wide by 6 feet long. For identification purposes he labeled this "V" pattern, "Site 1" and later, the point of origin found within: "Point Of Origin #1". (exhibit #38)

[REDACTED] and [REDACTED] inspected this area using two grid lanes, each approximately 1 foot wide. (exhibit #39,40). They visually inspected these lanes with a magnifying glass and then with a magnet. The magnet picked up ferrous material which looked like short threads or fine wire.

Inspection of indicators in the two "V" patterns, on the railroad bed, north of "Site 1", showed the fire moved up the cut bank toward the rest of the burn on the hillside.

The two "V" patterns, one just north of Site #1 and the other on the northern most end of the burn along the tracks, were identified as "Site 2" and "Site 3", respectively. The fourth burn was a narrow stringer on the cut bank. Inspection of the indicators in this stringer, showed the fire moved down hill, from the main burn, to the toe of the bank. This portion of the fire continued moving north along the toe of the bank and then burned back up the cut bank into the large rock outcropping, several feet north of the point at which it came down the bank. From the indicators [REDACTED] concluded this was not an origin area and did not give this stringer a label.

Inspection of microindicators in "Site 2" reduced the area to a specific origin measuring approximately 12 inches. This area was small enough not to require a formal grid lane. (exhibit 41,42,43). [REDACTED] searched the area visually with a magnifying glass and then ran a magnet over it locating a short thread or fine wire object which stuck to the magnet. ,

[REDACTED] and [REDACTED] established a power pole (#33) as a reference point and measured bearings and distances from this pole to the 3 points of origin as well as the weld and the splice on the track.

█████ collected the two thin cross sectional slices of the railroad track sitting next to the removed section of railroad track. (exhibit 17).

#### July 31, 2008 Examination of area below railroad bed.

At approximately 12:30 █████ resumed examination of the fire scene beginning with the burn spot below the railroad grade. He started with photographing the conductor over the burn area, while Officer █████ collected evidence up on the railroad bed.

█████ then continued examination of the burn, following indicators down hill that lead him to an area at the bottom of the burn, on the steep bank which had a "V" pattern. Indicators leading █████ to this location were sooting on small rocks and degree of destruction on small vegetative matter. This "V" pattern was named "Site #4". He continued along the bottom area of the burn and located 3 other "V" patterns. From south to north these other 3 "V" patterns were named "Site 5, Site 6 and Site 7" respectively.

█████ stopped his examination of the area to record the scene with photographs prior to leaving for the evening.

#### August 1, 2008

█████ and █████ arrived at the burn approximately 11:00 am and resumed inspection of the origins. █████ examined Site #4, on the bottom of the burn, below the railroad, on its southern most side. Using the magnifying glass and the naked eye he followed micro indicators, (charring and damage differential), and located a burned piece of cedar bark in the point of origin. The bark was approximately one half inch wide by one and one half inches long. There is a partially burned cedar at the top of the burn 50 feet uphill.

█████ also examined two other spots lower down on this burn. (Site #5 and Site #6). They were both clumps of grass. He used the magnet on these and visually inspected them however he was unable to successfully sift them since he could not dig in the grass with out potentially damaging or moving any evidence. █████ later dug out the entire clumps and stored them in a sealed bag to dry and analyze at a later date. On initial examination, he was able to locate several burned leaves, from a deciduous bush, among the grass stems. A plant with similar leaves was adjacent to the clumps of grass and this bush had burned.

█████ examined the fourth spot, "V" pattern, which is the furthest spot to the north on the bottom of the burn. (Site #7). He inspected it visually with a magnifying glass and magnet.

#### August 2, 2008

█████ and █████ returned to the scene at approximately 11:45 am and began a close examination of Site #1 at the south end of the burn on the railroad bed.

█████ made passes over the area with a magnet and located a flake and granule of unknown material which he collected. He also observed more fire direction indicators that pointed toward the south end of the Site #1, which became point of origin #1.

Leaving Site #1, █████ moved to the area on the slope below the railroad bed, and located several clips that hold the track iron to the concrete tie. He found these clips scattered among the large boulder scree. The clips had scratches on them as if they were thrown from the railroad bed to the rock scree below. They also had fresh wear marks and grease accumulation which is consistent with being recently removed from the track, most likely during the track replacement and weld. █████ photographed and collected the clips. (exhibit \_\_photos Sony: 520-532).

At approximately 14:30 he resumed the inspection of Site #1.

Using the magnet, [REDACTED] recovered small metallic spheres in this area which upon further examination were found to be hollow.

The Point of Origin, of Site #1, was covered with groupings of rocks with leaves and other forest litter inserted between the rocks. (exhibit 39, 41 photos: Nikon #49, Sony #539) Upon passing the magnet over the litter he was able to pick up a few of the spheres. Assuming the spheres may have sifted down between the rocks and leaves; he dug them up, sifted them and passed the magnet over the siftings. With this method [REDACTED] retrieved many more spheres than just passing the magnet over the top of the rocks and leaves. He dug deeper into the loose soil to discover how deep the spheres were distributed and found that after approximately the 1 inch depth mark, they disappeared.

#### August 4, 2008

[REDACTED] wanted to determine if the spheres could have an association with the burn or were common to the region. To do this he examined four "sample plots", in Site #1, in addition to the Point of Origin #1.

Sample plot #1 was in the burn 7 feet 4 inches above the Point of Origin which produced approximately 2 spheres. Sample plot #2 was outside the burn to the south, 17 feet from sample plot #1 at the same elevation. Sample plot #2 produced no spheres.

Sample plot #3 was approximately 30 feet south of the Point of Origin outside the burn at the same elevation and produced no spheres.

Sample plot #4 was in the burn 2 foot 10 inches north of the Point of Origin and produces approximately 6 spheres which were smaller in diameter than those found in the Point of Origin.

#### August 5, 2008

[REDACTED] continued the origin examination on the railroad cut bank, moving on to Sites #2 and #3. He performed the same search procedure with sifting and using the magnet, as he did on Site #1.

Site #2 is encircled by several large rocks. Searching the area with the magnet divided the space into three significant areas. The top, (east), portion of the space produced the most spheres. The lower left, (north west), portion produced fewer spheres. The lower right or south west portion produced no spheres at all. (see sketch, exhibit 9). The spheres in origin #2 are smaller in diameter than those found in origin #1. At this site the spheres disappeared from the loose soil after approximately ½ inch in depth.

[REDACTED] also sampled a plot, 22 inches above the Point of Origin in Site #2. This plot produced no spheres. Officer [REDACTED] and [REDACTED] noticed a crust on the soil surface here that was consistent with moisture soaking and drying on the soil. They surmised this may be the retardant that the welders sprayed on the ground to prevent sparks from starting a fire.

They also noted that the vegetative material in the sprayed area was burned.

[REDACTED] performed the same operation on the Point of Origin in Site #3 and found no spheres at the point of origin. He found 2 very small spheres several inches to the south east of the point of origin and one under the lip of a rock. [REDACTED] examined a sample plot approximately 15 inches above origin #3 and found 3 spheres which were also small diameter.

None of the samples in Point of Origin #2 or #3 produced as many spheres as the sample taken in Point of Origin #1.

██████ decided to learn if there is a relationship between the spheres and the point of origin.

Site #1 was large enough to take many sample plots, within the burn, to provide data for a relationship analysis.

██████ plotted out 18 more sample plots totaling 21 plots with the original sample plots included. The plots were arranged in 4 horizontal rows of 5 plots, (the top row had 6 plots), and the lowest row was on the same level as the point of origin. The top row was the same level as Sample Plot #1. The plots were spaced approximately 24 inches laterally and vertically (terrain allowing) from Point of Origin #1 (exhibits 41, 92). He performed the same sampling process as before, sifting and passing a magnet over the siftings. He also repeated this in the original sample plots that were within the point of origin.

The sampling results show the concentration of beads is in the burn and in the lower two feet of the burn. The largest numbers were in the vicinity of the point of origin in Site #1 (exhibit 92).

After leaving the origin area for the day, ██████ met with Pacific Gas and Electric "Trouble Man", ██████ and had him examine the photos of the damage to the conductor. His analysis was that it appeared to be a gun shot which would have the velocity to sever the strands and bend them backwards as they appeared in the photo. He also explained that something would need to have acted as a "ground" to carry the energy to the earth and cause a fire, or something would have to span from this conductor to one of the others to cause an arc which could have dropped molten metal to the earth causing a fire. If this had happened then there would be corresponding damage to a second conductor or be long enough to reach from this conductor to the ground. During an examination from the ground, ██████ did not locate damage on the other conductors or items long enough to reach the ground.

Pacific Gas and Electric was contacted by the Assistant U.S. Attorney's Office, Sacramento, requesting a SCADA report for interruptions in this line. The report did not reveal any interruptions, which would indicate there were no shorts in the line (exhibit 82).

A closer analysis of the conductors and damage is required and will be arranged with PG&E to include or eliminate the power line as a possible cause.

#### August 6 & 7, 2008

██████ requested any reports of the Rich Fire from the 911 lines at the County Sheriff's Department, California Highway Patrol and the Plumas National Forest Dispatch Office. (exhibit 83)

This resulted in confirming that ██████, whose name is listed on the U.S. Forest Service "WildCAD Incident Card", was the first party to report the fire. (exhibit 84).

#### Interviews

Special Agent, ██████ interviewed ██████ and crew members of U.S. Forest Service Engine 25.

██████ was traveling eastbound on Highway 70 in his motor home. ██████ was alerted to a train on the tracks by the squeal of its brakes. He noted that the train was located near a tunnel on the railroad. He continued east and observed a fire on the hillside. ██████ pulled over in a turnout across from the fire and attempted to call 911 on his cell phone but had no cell service. He later determined, by his cell phone log, that he had attempted the call at 15:10 hours.

██████ and ██████ later drove the highway. ██████ video taped the drive while ██████ narrated what he recalled seeing during his initial drive up the canyon (exhibits 68).

interviewed the crew of Engine 25, the first engine to arrive on scene after the initial report. Using photographs of the scene as they may have seen it upon their arrival, had them draw on the photographs to illustrate what they remembered observing (exhibits 69-73).

Two of the crewmembers remembered a spot fire below the railroad tracks. Three of the crew which include the Engineer and Captain, who usually have the most fire experience, did not see fire below the railroad tracks. All members noted the intensity of the fire on the ridge. The wind direction was up slope and up canyon. , the engine captain, emphasized that the fire was wind driven.

a crew member in the rear seat of the engine stated he took two photos of the initial view of the fire with his cell phone camera. These photos do not show fire below the rail road bed (exhibit 70).

**August 8, 2008**

Special Agent and interviewed the original reporting party, at her home in Oroville, California.

and her 14 year old daughter, , stated the fire was below the railroad grade. drew a sketch indicating the location. viewed several photos (provided by investigators) and identified which photos may have been where she saw the fire (exhibit 74).

#### **Weather conditions**

The fire started in a portion of the canyon that narrows down and creates winds of higher velocity than wider areas of the canyon. A fire behavior analyst measured wind speed approximately ½ mile below the point of origin at 4.3 mile per hour. Approximately 200 yards below the point of origin (south) he measured the wind speed at 14.3 miles per hour. ½ mile above the point of origin (north) the wind speed was 5.5 miles per hour.

During the course of the investigation at the origin area, the investigators noticed a stiff breeze that was up canyon (south to north) shifting to an angle up slope and up canyon. (south west to north east). This wind direction was illustrated by the direction the indicator flags were blowing in several photographs (exhibits 37, 40).

**November 18, 2008**

#### **Metallurgical examination of metal spheres located at origin.**

An initial analysis of the metal spheres was conducted by a metallurgist. The spheres were identified as steel rather than iron, due to the elemental content which included iron, carbon, manganese and chromium.

The metallurgist also pointed out that metal spheres can be produced by welding or cutting of metal. Welding produces solid spheres while cutting typically produces spheres with hollow centers. The spheres found in the origin had hollow centers (exhibit 55).

**September 15, 2009**

#### **Examination of power line adjacent to origin.**

On September 15, 2009 and an electrical engineer, contracting with the U.S. Forest Service, examined the electrical conductors below the rail road bed which spanned across the burn area below the railroad bed. Also present were a Pacific Gas and Electric (PG&E) investigator and an electrical engineer contracting with PG&E.

PG&E technicians removed the conductor with the broken strands as well as an adjacent conductor and lowered



them toward the ground where investigators could view them.

Upon inspection it was evident that a semicircular deformation on the upper side of the conductor was a shape and size consistent with a bullet strike (exhibits 66, 67).

The event produced minimal arcing upon separation of the strands.

A section of the damaged conductor approximately 10 feet long, which included the damaged portion, was removed by PG&E technicians and collected by [REDACTED]

Investigators examined the other two adjacent conductors for marks indicating a short between conductors but found no evidence of this.

#### **Review of origin area on rail road bed.**

During the electrical conductor examination [REDACTED] viewed the present condition of the origin area, specifically the work area on the rail road tracks.

[REDACTED] noticed the south end of the replaced track was now welded. During the fire this end was connected with plates bolted to the two rails. The old removed section of rail was no longer lying beside the work area and was not located.